

What Multi-Level Solutions Can Enhance the Financial Literacy of Healthcare Professionals in Kenya?

By Fiona-Hope A. Mtula^{*}, Barbara Son[‡] & Francis Wambalaba[°]

Financial literacy is a crucial asset within the human capital pool, whether individuals are working within or outside the hospital setting. Professionals in various fields benefit from financial literacy, and the main recipients include individuals, the broader economy, businesses, and the overall financial system. In the context of medical professionals, the expectation is often that they make informed business decisions and effectively manage healthcare facilities. However, a notable challenge is the potential lack of essential skills in financial literacy among these professionals. In Kenya, a considerable number of healthcare professionals face a deficiency in financial literacy skills, hindering their ability to proficiently handle even small businesses in private practices and oversee financial matters in hospital departments, both in public and private healthcare facilities. Consequently, the objective of this study is to present healthcare professionals with a roadmap to identify and address gaps to enhance their financial literacy. A survey was conducted from June to July 2023, involving 339 doctors, including medical doctors, dentists, and pharmacists. The findings were interesting with respect to gender performance and global comparisons. Unlike previous studies, female doctors demonstrated a higher financial knowledge, behavior, and attitude, suggesting a well-rounded financial proficiency compared to their male counterparts. At the global level, the descriptive analysis revealed strong financial knowledge, positive attitudes, and prudent financial behaviors among the Kenyan participating doctors compared to the OECD global averages. For example, unlike the OECD global average of 52.5% in financial knowledge and literacy, the findings for the Kenyan counterparts stood at 77%; while the OECD global average for financial attitude was 70%, that of the Kenyan counterparts was at 75%; and compared to the OECD global average of prudent financial behavior of 59%, that of the Kenyan counterparts was 69%. It seems that socio-demographic factors, coupled with financial knowledge, attitudes, and behaviors, intricately influence the financial literacy of healthcare professionals. The findings highlight the importance of implementing multi-level solutions to enhance overall financial literacy among healthcare professionals. These solutions include tailored financial programs, self-paced online courses with interactive elements, and the integration of financial literacy into medical undergraduate and postgraduate training curricula.

Keywords: *healthcare professionals, financial literacy, Kenya, multi-level solutions*

^{*}Head of Department of Anesthesia, Webuye Sub-County Hospital, Kenya.

[‡]Professor, Akio Morita School of Business, Anaheim University, USA.

[°]Professor of Economics, United States International University, Kenya.

Introduction

Financial literacy has been defined as a combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being (OECD 2020). Financial literacy holds importance in the healthcare sector where practitioners inevitably transition into managerial roles, and the integration of financial acumen becomes imperative (Millen and Stacey 2022). Financial literacy is required for them to be able to manage the limited financial resources allocated to the county health sector (Ministry of Health 2018, 2022). Despite their expertise, healthcare professionals often lack formal financial education in their training curriculum, prompting a need for the incorporation of financial training in medical education (Safarani et al. 2018). The multifaceted nature of financial literacy, including knowledge, behavior, and attitude, emphasizes its role in personal and professional advancement. This emphasizes their interconnectedness and influence on individual financial well-being (OECD 2005, 2020, 2014).

In the healthcare context, the financial literacy of professionals becomes integral to effective management, especially in the face of privatization trends and evolving healthcare systems. Financial management skills are crucial for successful private practices, where practitioners must navigate pricing, costing, and budgeting decisions. Financial management is a determining factor in the success of privatized hospitals (Khosravi et al. 2022, Torkzad and Beheshtinia 2019, Sepehri 2014, Sohrabi et al. 2021). Researchers and policymakers have shown interest in financial literacy among healthcare professionals (Cawyer et al. 2022, Payne et al. 2020, Lall et al. 2019, Bar-Or et al. 2018, Connelly and List 2018). They all show a gap and a need for improvement in financial literacy levels. They also show a policy gap and an educational gap when it comes to financial education (Atkinson and Messy 2013). Cawyer et al. (2022) demonstrate a willingness for physicians to improve their financial knowledge if presented with the opportunity. Studies carried out in the United States have been found to have a poor credit score, a deficiency in the scope of financial principles, and low levels of long-term savings. Furthermore, they were found to be overwhelmed with large amounts of student debt (Ahmad et al. 2017). Cawyer et al. (2022) found a positive correlation between financial literacy and a sense of well-being among Obstetricians and gynecologists. A poor sense of well-being has been shown to translate to worse patient outcomes (Escribe et al. 2022).

Among the developing countries, a large proportion of the research has been carried out in India. Among these studies, the overall levels of literacy are low (Agarwal and Biswas 2022, Sharma et al. 2021). In Africa, Millen and Stacey (2022) have looked at financial literacy among healthcare professionals showing lower levels of financial literacy than anticipated. This study is not aware of any studies on financial literacy among healthcare professionals in East Africa. The financial challenges faced by healthcare professionals, such as the burden of educational debt, underscore the need for enhanced financial literacy. The study explores the financial management practices of healthcare professionals, considering their overall well-being (Sabri and Awc 2020). Furthermore, this

descriptive study provides a comprehensive understanding of the current financial literacy landscape among healthcare professionals in Kenya. By exploring the intricacies of financial knowledge, behavior, and attitudes, the research seeks to identify areas for improvement and inform targeted interventions to enhance the financial well-being of healthcare professionals in the country.

Literature Review

The objective of this study is to present healthcare professionals with a roadmap to identify and address gaps in their financial literacy. The study specifically evaluated the relationship between social and demographic factors, financial knowledge, financial attitude, financial behavior, and financial literacy.

Social and Demographic Factors

Age, gender, geographical location, marital status, type and level of qualification, years of experience, and family income are significant correlations to the financial literacy status of an individual (Agarwal and Biswas 2022). Studies have found men are more financially literate than women in the healthcare profession (Agarwal and Biswas 2022, Jayakumar et al. 2017). Marriage has been observed to be a contributing factor to financial literacy (Akin 2021, Hsu 2016, Mashizha et al. 2019). Financial literacy among healthcare professionals has been shown to increase with years of experience (Agarwal and Biswas 2022). Furthermore, researchers have demonstrated no association difference in age groups and levels of financial literacy (Millen and Stacey 2022). Others have shown that financial literacy increases with age but later in the life cycle begins to decline (Klapper et al. 2015, Francisco et al. 2022, Mashizha et al. 2019).

Among healthcare professionals, there is a link between family income and financial literacy (Abolhallaj et al. 2021). Higher levels of income have been associated with higher levels of financial literacy (Nanziri and Leibbrandt 2018). Those in tertiary education have also been found to be 15 percent more financially literate than those in secondary school (Klapper et al. 2015). The healthcare profession is a highly specialized field and the number of specialties within each cadre is extensive. The type of specialization has been associated with the levels of financial knowledge. However, there was no influence of type of specialization on financial behavior and financial attitudes (Millen and Stacey 2022). Studies have linked higher levels of financial literacy with those living in urban areas (Francisco et al. 2022).

Financial Knowledge

Financial knowledge is a cognitive process that involves informational acquisition and expansion of knowledge involving financial principles and the instruments available (OECD 2020). Medical training programs often omit financial education (Connelly and List 2018). There is a positive relationship between financial education and financial knowledge (Kadoya and Khan 2020)

Financial knowledge enhances financial literacy and therefore enables an individual to buy financial products and services per their needs (Lusardi 2019, OECD 2022, Atkinson and Messy 2012).

Financial literacy often requires calculations which may vary from complex such as compound interest to simple such as simple interest (Peters et al. 2019, Lusardi and Mitchell 2011). The OECD/INFE questionnaire covers seven questions on various topics for non-experts. Each correct question is awarded 1 point and the total correct responses are summed up. A score of six or more indicates a high level of financial knowledge. The seven questions are related to financial concepts and basic calculations. These are division, the value of money over time, inflation, interest rate, simple interest calculation, compounded interest calculation, risk and return, and diversification of risk. Using this questionnaire as a tool, the OECD carried out a study on 4 continents spanning 14 countries on the financial literacy of the general adult population. No country achieved a population score exceeding seventy percent in terms of a high level of financial knowledge. Most countries had a population score of fifty percent or less (Atkinson and Messy 2012).

Financial Attitude

Financial attitude is an individual's judgment and opinions regarding finances (Ajzen 1991). It can be characterized as a set of beliefs that categorize an object as either positive or negative, influenced by an individual's perspectives or by the opinions of others (Culbertson 1968). Financial attitude varies from country to country even among high-performing economies (OECD/INFE 2016, OECD 2020). The behavior and attitudes of an individual are interlinked (Ajzen 1991). Studies done in India have found financial attitudes together with parental socialization and financial literacy to influence financial behavior in the youthful population (Bakar and Bakar 2020). People who have an adverse attitude towards saving for the future have a short-term view of money. People who have a preference for instant gratification with immediate spending are less likely to have emergency funds (Atkinson and Messy 2012, INFE 2012). Good financial attitudes have been linked to good financial management practices (Rajna et al. 2011, Yap et al. 2018). These financial management practices include beliefs in the repayment of borrowed money (Yap et al. 2018, Atkinson and Messy 2012). Financial attitudes together with financial literacy and good financial management practices have been shown to have a positive influence on financial satisfaction (Yap et al. 2018). Attitudes are shaped by an individual's experiences. Awareness of financial fraud has been linked to the presence of financial literacy (OECD 2020).

Financial literacy surveys have previously been done using the OECD /INFE questionnaire (Atkinson and Messy 2012, OECD 2014, 2020, 2022). They include 3 attitude questions which then gauge the respondents' attitudes towards finances. The respondents declare whether they agree or disagree with the statement scoring a five-point Likert scale ranging from completely agree to disagree (Correlate to 1-5) then a simple average is done. A high score is considered a score of 3 and

above. The first question looks at whether one lives for today and has little concern for tomorrow to test attitude on long-term financial planning. The second question looks at the level of satisfaction that one gets from saving money as opposed to spending it. This looks at the attitude toward long-term financial planning and saving. Lastly, it looks at the generic question of whether money is there to be spent. This also looks at the individual's attitude on long-term vs short-term financial planning. Such variations have been demonstrated to differ from one country to another. Millen and Stacey (2021) discovered that 37% of South African healthcare workers achieved the minimum financial attitude score.

Financial Behavior

Financial behavior has been defined as real-life human actions related to making financial decisions and doing financial activities (Shim et al. 2009). Behavior in the financial sector combines elements of managing cash flows, debts, saving funds, and investing in assets financial behavior has been shown to have the most impact on financial literacy levels (Rai et al. 2019). Financial behaviors give insight into financial decisions on a managerial level, individual level, or development of investment strategies (Gerth et al. 2021). Healthcare professionals experience a large leap in income and can have a difficult financial journey without a good knowledge base. Those with higher levels of financial literacy have been found to have a lower amount of debt (Payne et al. 2020). Borrowing behavior is higher among healthcare professionals than among the general population (Millen and Stacey 2022).

Saving and long-term planning are part of good financial management practices (OECD 2020). Timely bill payment is another financial behavior principle that was higher among financially literate individuals (OECD 2020, 2021). Digital literacy has been linked with higher levels of financial behavior (OECD 2020). Households with higher levels of financial literacy have been linked to better financial behavior. The OECD (2020) questionnaire covers 9 questions on behavior in finance. Each question is awarded one point for a correct response and a high score is considered a score of 6 and above with a maximum score of 9. The nine questions are the presence of careful consideration before purchase, timely bill payments, keeping watch of personal finances, long-term financial goal setting, being responsible as well as having a household budget, active saving and or buying investment, active saving and or buying investments after gathering knowledge, choosing products after shopping around with a knowledge base or financial advice and presence of borrowing to make ends meet.

Methods

Research Setting and Sampling

We employed a descriptive study design to gain insights into the diverse factors influencing the financial literacy of healthcare professionals in Kenya. The

survey targeted doctors, including medical doctors, dentists, and pharmacists, and spanned over two months, from June to July 2023. The study aimed to assess the impact of sociodemographic factors, evaluate the influence of financial knowledge and attitude, and determine the effect of financial behavior on financial literacy. A systematic analysis of these aspects played a crucial role in identifying and suggesting multilevel solutions to enhance financial literacy among healthcare professionals, thereby contributing to their overall financial well-being.

The study population consisted of Kenyan doctors, and data were extracted from retention registers maintained by regulatory bodies like the Kenya Medical and Dentistry Practitioners Board and Pharmacy and Poisons Board Kenya. Simple random sampling was employed to ensure the fair representation of all doctors within the population. The sample size, determined using Yamane's formula, amounted to a minimum of 392 participants.

Data Collection and Analysis

A structured questionnaire served as the primary data collection tool, featuring a web-based format for flexibility and wide reach. The questionnaire comprised sections on sociodemographic information, financial knowledge, financial behavior, and financial attitude. Likert scales were employed to assess financial behavior, financial knowledge, and financial attitudes. The online questionnaire, also available in hard copy for participants with technological constraints, was shared via email, direct messages, and WhatsApp. Before full-scale data collection, a pilot study was conducted to enhance questionnaire reliability. Ethical approval was obtained from the Institutional Review Board (IRB) at the United States International University (USIU) and the Kenya National Commission for Science, Technology, and Innovation (NACOSTI). The data analysis encompassed descriptive statistics, including means, standard deviations, medians, and interquartile ranges, to summarize continuous variables. Frequencies and percentages were used for categorical variables to provide a comprehensive summary.

Results

Out of the 394 questionnaires distributed, 339 were fully completed and error-free. The majority of respondents were female (58%). In terms of age distribution, 51% fell within the 26-35 age range, and 92% were between 26-45 years old. Regarding marital status, 56% were married, 35% were single, 4% were divorced/separated, 1% were widowed, 1% were cohabiting, 1% were dating, and another 1% were not sure. About geographical zone, 86% were from urban areas. The distribution of medical cadres showed that 89% were medical doctors, 9% were pharmacists, and 2% were dentists. Notably, 57% possessed a master's degree, highlighting a high level of education among the respondents. Analysis of work experience revealed that 64% had 1-10 years of experience, and the distribution of income brackets indicated that a significant portion (45%) earned

between 200,001-400,000 Kenya shillings. Overall, the study sample predominantly comprised female, mid-career, married, urban-dwelling healthcare professionals, with medical doctors being the predominant cadre and a high level of educational attainment.

Socio-Demographic Factors and Financial Literacy

The analysis of demographic factors related to financial literacy (Table 1) reveals varying degrees of influence.

Table 1. Descriptive Analysis of Socio-demographic Factors

Demographic Characteristic	Financial Knowledge		Financial Attitude		Financial Behaviour		Financial Literacy	
	Std β (Std. Error)	Sig.	Std β (Std. Error)	Sig.	Std β (Std. Error)	Sig.	Std β (Std. Error)	Sig.
Gender	-0.007 (0.142)	0.962	-0.093 (0.15)	0.536	-0.641 (0.257)	0.013	-0.679 (0.431)	0.116
Age	0.261 (0.162)	0.108	-0.129 (0.17)	0.449	0.067 (0.292)	0.818	0.202 (0.49)	0.681
Marital Status	0.05 (0.109)	0.647	-0.008 (0.114)	0.941	0.193 (0.196)	0.325	0.268 (0.329)	0.417
Geographical Zone	-0.226 (0.186)	0.225	0.464(0.196)	0.018	-0.179 (0.336)	0.594	-0.957 (0.565)	0.091
Highest Level of Education	-0.164 (0.114)	0.152	0.195(0.12)	0.103	-0.187 (0.205)	0.364	-0.199 (0.345)	0.565
Employment Status	0.179 (0.124)	0.15	-0.114 (0.13)	0.381	0.248 (0.224)	0.268	0.378 (0.376)	0.316
Medical Cadre	0.003 (0.109)	0.978	0.076(0.114)	0.505	0.358 (0.196)	0.069	0.302 (0.33)	0.361
Years of Working Experience	-0.077 (0.173)	0.655	0.11(0.182)	0.544	-0.191 (0.311)	0.54	-0.198 (0.524)	0.706
Income Level	0.015 (0.068)	0.828	0.099(0.072)	0.17	0.034 (0.123)	0.784	0.175 (0.207)	0.398
Model R ²	.025		.034		.039		.030	

Age, with a standardized beta coefficient of 0.261 ($p = 0.108$), and geographical zone, indicated by a standardized beta coefficient of -0.226 ($p = 0.225$), demonstrate noticeable but modest effects. On the other hand, factors such as gender, marital status, education level, employment status, medical cadre, years of working experience, and income level exhibit minimal impacts. These findings underscore the multifaceted nature of financial literacy and highlight the role that different demographic characteristics may play in shaping individuals' financial knowledge, attitude, and behavior.

Financial Knowledge and Financial Literacy

The descriptive analysis of financial knowledge (Table 2) provides a comprehensive evaluation of respondents' perspectives on fundamental financial concepts. Using Likert scale-based questions, the analysis categorizes responses

into five levels, ranging from Strongly Disagree (SD) to Strongly Agree (SA). The study sheds light on diverse perceptions of financial knowledge among participants, enhancing the understanding of their financial literacy.

Notably, participants expressed varying levels of confidence in their financial knowledge. While 46.6% were neutral about their current financial knowledge levels, 36.2% agreed, and 17.1% disagreed. A significant majority (90.8%) correctly disagreed with the statement that if four brothers share Ksh 1000, each would get less than Ksh 200. Similarly, 95.9% correctly disagreed with the idea that Ksh 1000 would buy more items in a year, emphasizing potential misconceptions about inflation.

Table 2. Descriptive Analysis of Financial Knowledge

	SD	D	N	A	SA
	%	%	%	%	%
My present financial knowledge levels are good	5.6	11.5	46.6	26.5	9.7
If 4 brothers share ksh 1000 they will each get less than ksh 200	85.5	5.3	2.7	2.7	3.8
In one year from now, ksh 1000 will be able to buy more items than it can buy today	93.5	2.4	1.2	.3	2.7
If I borrow ksh.50 from a friend and repay ksh.50 in one week it will have gained interest	75.8	6.2	8.6	2.4	7.1
If I put ksh200 into a savings account with a guaranteed interest rate of 1% per year and I don't make any further payments into this account and I don't withdraw any money. At the end of the first year, I will withdraw the same amount.	76.4	10.3	5	3.5	4.7
Ksh 200 was initially deposited. It was subjected to 1% compound interest per year for five years. At the end of year 5, the amount would be more than Ksh 210	18	6.8	10.6	16.2	48.4
High inflation means that the cost of living is increasing rapidly	5.3	2.9	2.9	16.8	72
If someone offers you the chance to make a lot of money it is likely that there is also a chance that you will lose a lot of money	7.1	5.3	14.5	20.9	52.2
It is less likely that you will lose all of your money if you save it in more than one place	14.5	6.5	10.3	18.9	49.9
The personal data that I share publicly online may be used to target me with personalized commercial or financial offers	3.8	1.2	5	18.9	71.1
Financial Knowledge Threshold (6/10)		60%			
Proportion that met threshold (out of all participants)		87%			
Average financial knowledge levels		77%			

Note: "Financial Knowledge Threshold" refers to the predefined benchmark that was used to categorize participants' performance to questions assessing their financial knowledge (high financial knowledge vs low financial knowledge). The derived threshold of 6/10 for financial knowledge in the table is based on the OECD INFE methodology (2018), with a slight modification, signifying a benchmark for high financial knowledge among participants. Participants attaining a score of 6/10 and above (or above 60% of the maximum) had high financial knowledge. The "Average Financial Knowledge" (as presented in the table above) was computed by assigning a score of 1 for each correct response and 0 for incorrect responses across the 10 questions measuring financial knowledge. The total score for each participant was converted to a percentage of the maximum achievable score, and the resulting percentages were averaged to provide an overall representation of participants' financial attitudes. The questions were derived from the OECD/INFE questionnaire and guidance notes for conducting an internationally comparable survey on financial literacy (INFE 2012, OECD 2022).

The analysis reveals participants' challenges with certain financial knowledge concepts. For example, 82% correctly disagreed with the notion that borrowing Ksh 50 and repaying it in a week would accrue interest, indicating a lack of understanding about interest dynamics in the remaining participants. The analysis suggests a significant level of understanding regarding simple interest (86.7%). However, the concept of compound interest was less well understood, with 64.6% correctly agreeing with compounded interest over 5 years (Table 2). Regarding inflation, 88.8% correctly agreed that high inflation rapidly increases the cost of living. A majority (73.1%) agreed that potential gains come with potential losses in financial opportunities. Additionally, 68.8% believed that spreading money across multiple savings locations decreases the likelihood of losing all funds. The majority (90%) acknowledged that personal data shared online could lead to targeted commercial or financial offers.

Financial Attitude and Financial Literacy

Table 3. Descriptive Analysis of Financial Attitude

	SD	D	N	A	SA
	%	%	%	%	%
Money is there for spending	14.5	16.5	40.1	20.4	8.6
I prefer living day by day and not worrying about tomorrow	52.2	22.7	14.7	6.2	4.1
I prefer spending money now rather than saving for the future	58.1	26.5	10.3	4.1	.9
If I borrow money, I have a responsibility to pay it back	.6	.3	1.2	7.7	90.3
I am satisfied with my present financial situation	47.2	25.1	18.9	6.8	2.1
I believe that banks should check the ethics of companies before providing them with banking services	4.1	5.3	22.4	22.1	46
I am prepared to risk some of my own money when saving or making an investment	.6	5.6	15.3	44.2	34.2
Because of my money situation, I feel like I will never have the things I want in life	36.9	22.7	18.3	10.6	11.5
Minimum financial attitude threshold (5/8)		62.8%			
Proportion that met threshold (out of all participants)		70%			
Average financial attitude levels		75%			

Note: "Financial Attitude Threshold" refers to the predefined benchmark that was used to categorize participants' performance to questions assessing their financial attitudes (high financial attitude vs low financial attitude). The "Average Financial Attitude" (as presented in the table above) was computed by assigning a score of 1 for each correct response and 0 for incorrect responses across the 8 questions measuring financial attitudes. The derived threshold of 5/8 for financial attitude in the table is based on the OECD INFE methodology (2018), with a slight modification, signifying a benchmark for high financial attitudes among participants. The total score for each participant was converted to a percentage of the maximum achievable score, and the resulting percentages were averaged to provide an overall representation of participants' financial attitudes. Participants attaining a score of 5/8 and above (or above 62.8% of the maximum) had a high financial attitude. The financial attitude questions were derived from the OECD/INFE questionnaire and guidance notes for conducting an internationally comparable survey on financial literacy (INFE 2012, OECD 2022).

The analysis of Financial Attitude (Table 3) offered a detailed portrayal of healthcare workers' perspectives on various financial attitude concepts. Utilizing a Likert scale, responses were categorized into five levels from strongly disagree to strongly agree, enabling a nuanced exploration of sentiments. Notable findings

include a diverse stance on the purpose of money, with 40.1% neutral and varying views on preferences for immediate spending versus future savings. Participants overwhelmingly agreed (90.3%) on the responsibility of repaying borrowed money. Financial satisfaction exhibited a majority disagreement (72.3%).

Additionally, 22% admitted their financial situation is a barrier to their financial wants, emphasizing the link between financial well-being and contentment. A noteworthy aspect is the inclination to take financial risks, indicated by the 44.2% agreement, underlining the connection between financial literacy and a proactive approach to savings and investments. Overall, the study uncovered intricate relationships between financial attitudes and literacy among healthcare professionals, shedding light on the nuanced interplay of these factors for comprehensive financial well-being. Lastly, the majority of healthcare professionals (68.1%) agreed with the importance of ethical considerations in financial practices.

Financial Behavior and Financial Literacy

The analysis of financial behavior (Table 4) presented a detailed portrayal of healthcare workers' perspectives on various financial behavior concepts. Using Likert scale-based questions ranging from 1 (strongly disagree) to 5 (strongly agree), the study explored various facets of participants' financial practices, including spending habits, budgeting, and bill payment. A significant portion of respondents indicated careful consideration of affordability before making purchases (51.9% strongly agree), and the majority affirmed paying bills on time (50.7% strongly agree). Healthcare workers demonstrated responsibility for day-to-day financial decisions (59% strongly agree) and often made plans to manage their income and expenses in various ways.

While a substantial proportion kept a note of their spending (49.5% strongly agree), fewer used banking apps or money management tools (32.5% strongly agree). The findings provide valuable insights into the financial behaviors of healthcare professionals, emphasizing the intersection between financial literacy and practical financial management. A significant proportion, 68.1%, of the participants acknowledged seeking knowledge or financial advice from a specialist when making saving decisions. Furthermore, a notable 44.1% of healthcare workers admitted to borrowing money, and 40.3% reported just getting by financially. These results reflect the interlinkage of financial literacy and financial well-being and highlight the need for targeted financial education and support initiatives. The participants' responses to the question on saving habits in the past 12 months revealed diverse financial behaviors (Table 5). Notably, 93.6% had utilized at least one of the savings options listed.

Table 4. Descriptive Analysis of Financial Behavior

	SD	D	N	A	SA
	%	%	%	%	%
Before I buy something I carefully consider whether I can afford it	1.5	5.9	15	25.7	51.9
I pay my bills on time	2.7	5.9	12.7	28	50.7
I watch my personal finance affairs closely	3.8	10	22.4	31	32.7
I have set long-term financial goals setting and I will strive to achieve them	5.3	9.1	21.8	31.9	31.9
I am responsible for day-to-day financial decisions(Household budget*)	.9	2.7	9.7	27.7	59
I have a household budget (Household budget*)	7.7	10	19.2	32.4	30.7
I make a plan to manage my income and expenses (Tracking income and expenditure**)	2.7	7.4	15	45.7	29.2
Keep a note of my spending (Tracking income and expenditure**)	6.2	20.4	23.9	32.4	17.1
I keep the money for bills separate from day-to-day spending money(Tracking income and expenditure**)	14.5	20.4	23.3	27.1	14.7
I make a note of upcoming bills to make sure I don't miss them (Tracking income and expenditure**)	7.7	13.3	15.3	37.5	26.3
I use a banking app or money management tool to keep track of my outgoings (Tracking income and expenditure**)	28.3	22.1	17.1	18.3	14.2
I arrange automatic payments for regular outgoings (Tracking income and expenditure**)	25.7	20.4	21.8	17.7	14.5
In the past 12 months, I have saved money in the following ways *** (Table 5)					
I believe decisions on saving are best made after seeking a knowledge base or financial advice guided by a specialist	7.2	5.7	19	28.5	39.6
I have borrowed money to make ends meet in the last 12 months	36.2	9.3	10.4	18.3	25.8
I am just getting by financially	16.2	14	29	22.4	17.9
Financial behavior threshold (9/15)		60%			
Proportion that met the threshold (out of all participants)		79.7%			
Average financial behavior levels		69%			

Note: "Financial Behavior Threshold" refers to the predefined benchmark that was used to categorize participants' performance to questions assessing their financial behavior (high financial behavior vs low financial behavior). The derived threshold of 9/15 for financial behavior in the table is based on the OECD INFE methodology (2018), with a slight modification, signifying a benchmark for high financial behavior among participants. Participants attaining a score of 9/15 and above (or above 60% of the maximum) had high financial behavior. The "Average Financial Behavior" (as presented in the table above) was computed by assigning a score of 1 for each correct response and 0 for incorrect responses across the 15 questions measuring financial behavior. The total score for each participant was converted to a percentage of the maximum achievable score, and the resulting percentages were averaged to provide an overall representation of participants' financial attitudes. *|**|***Some financial behavior questions had multiple options to ensure wide coverage. These questions were analyzed to give an individual score of 1 or 0 before the calculation of the individual averages. The financial behavior questions were derived from the OECD/INFE questionnaire and guidance notes for conducting an internationally comparable survey on financial literacy (INFE 2012, OECD 2022).

Table 5. Methods of Saving Over a 12-Month Period

	SD	D	N	A	SA
	%	%	%	%	%
Saving cash at home or in my wallet	46.4	21.3	13.1	10.9	8.3
Paying money into an account	11.1	9.5	10.2	38.9	30.3
Buying bonds or time deposits	42.3	21.5	14	13.6	8.6
Investing in crypto-assets	69.7	17.6	9	1.8	1.9
Investing in stocks and shares	48.2	17	13.8	12.7	8.3
Saving or investing in some other way, other than a pension	15.2	7.2	10.9	37.3	29.4

Furthermore, 67.7% appropriately refrained from saving cash at home or in their wallets as the most suitable method. The majority of healthcare workers

preferred saving by depositing money into an account (67.7%) and saving or investing in ways other than a pension (66.7%), indicating a preference for more secure savings methods. Only 3.7% expressed a preference for investing in crypto-assets. This study also revealed that only 22.2% bought bonds, and only 21% bought stocks or shares, showcasing varied approaches to financial planning and investment among the participants.

Discussion

Sociodemographic Characteristics and Financial Literacy

The study delved into the impact of sociodemographic factors on financial literacy among healthcare professionals. Both men and women exhibited high financial literacy, with women scoring slightly higher on average. This contrasts with other studies that identified being a male doctor or a male student as an independent factor for higher financial literacy (Millen and Stacey 2022, Jayakumar et al. 2017, Altan and Biçer 2017). Interestingly, female doctors in this study demonstrated higher financial knowledge, behavior, and attitude, suggesting a well-rounded financial proficiency among them.

In addition, the study identified the highest financial literacy in doctors between the ages of 45-55, after which financial literacy levels began to decline, aligning with findings in other studies conducted in developing countries (Klapper et al. 2015). Financial knowledge steadily increased from below the age of 25 up until 60 years, with a slight decline after 60, followed by a further increase beyond the age of 60. This contradicts studies suggesting that before the age of 61, an increase in age leads to higher financial knowledge, while after 61, the reverse is true (Francisco et al. 2022). In the present study, despite the increasing financial knowledge score, financial behavior and attitude declined beyond the age of 60, resulting in a lower overall financial literacy score. Francisco et al. (2022) proposed that beyond the age of 61, it is unlikely that individuals will attain the appropriate financial attitude, aligning with our findings. Similar to our study, they also identified two age ranges, 30-45 and 46-60, as increasing the probability of attaining an adequate level of financial literacy (Francisco et al. 2022).

Marital status demonstrated some influence, with married and divorced individuals showing higher financial literacy, possibly attributed to spousal support and increased financial responsibilities (Mashizha et al. 2019). However, widowed doctors in this study had lower financial attitudes, financial knowledge, financial behavior, as well as overall financial literacy. This contrasts with findings in other studies that have identified higher financial literacy levels among widowed women (Hsu 2016).

The study also found that urban-dwelling doctors exhibited higher levels of financial literacy than those in rural and other areas. Similar findings in other studies have suggested that this could be due to increased access to financial products and services in urban settings (Francisco et al. 2022, Lusardi and Mitchell 2011).

Working experience had a limited impact on overall financial literacy. There was an increase in average levels of financial literacy with an increase in years of experience up to 30 years, followed by a decline. This pattern aligns with other studies that have reported a positive association between financial literacy and years of experience (Agarwal and Biswas 2022). Additionally, there was a trending increase in financial knowledge levels with the level of income. However, income was found to contribute only slightly to financial literacy, consistent with the findings by Nanziri and Leibbrandt (2018).

The level of education was observed to have only a mild effect on financial literacy in this study. Similar research has indicated that unless the education is finance-related, the level of education may not necessarily correlate with financial literacy levels (Agarwal and Biswas 2022, Altan and Biçer 2017). Nevertheless, individuals with higher levels of education were found to have higher financial literacy.

Financial Knowledge and Financial Literacy

The participants demonstrated a robust financial knowledge, averaging 77%, which surpasses the OECD (2020) global average where only 52.5% of participants attained the minimum threshold for their study. The self-assessment of financial knowledge revealed interesting patterns, as those confident in their financial understanding had higher compared to those unsure or self-assessing as having low knowledge. This phenomenon is believed to be associated with lower participation in financial markets among those with low self-assessment (Salvatore et al. 2017). The study also conducted a focused examination of doctors' financial numeracy through five questions, revealing a high level of proficiency among participants. Notably, over 90% correctly answered questions related to sharing funds among siblings, the impact of inflation on the cost of living, and the time value of money. Furthermore, the majority expressed confidence in their responses, emphasizing a robust understanding of these financial concepts.

The study's assessment of doctors' knowledge of risk and return, as well as risk and diversification, revealed a solid understanding of these financial concepts among the majority of participants. Specifically, 73% correctly acknowledged the association between the opportunity for significant financial gains and the likelihood of substantial losses, while 69% recognized the importance of diversification in reducing the risk of losing all invested money. These results align with global studies indicating higher proficiency in risk and return compared to risk and diversification (77-79% on risk and 58-63% on risk and diversification), highlighting the significance of these factors in effective retirement planning (OECD 2020, Lusardi and Mitchell 2011). In the assessment of financial knowledge on interest, the findings align with broader trends suggesting a decline in knowledge as the financial concept becomes more complex. This reinforces the importance of targeted financial education efforts (OECD 2020, OECD/INFE 2016). The results indicate the need for focused educational initiatives to enhance understanding, especially in areas where complexity might pose challenges to individuals' financial literacy.

Financial Attitude and Financial Literacy

The average financial attitude attained among participants was 75%, surpassing the 70% OECD benchmark (OECD 2020). While this indicates a positive trend, it also suggests the ongoing need for improvement in fostering even more positive financial attitudes among healthcare professionals. The study delved into health workers' attitudes toward taking financial risks, revealing that 78% had positive attitudes in this regard. This is under the importance of tailoring financial guidance to align with individual risk tolerance levels, helping healthcare professionals make informed financial decisions (Despard et al. 2020). Additionally, the study highlighted that 74.9% of healthcare professionals showed a preference for long-term planning over immediate concerns, and 84.6% expressed a willingness to prioritize saving for the future over immediate spending. These findings indicate a noteworthy inclination among doctors toward prioritizing long-term financial planning and savings (Atkinson and Messy 2012). It suggests a positive orientation towards securing financial well-being over time, emphasizing the importance of considering future financial goals and objectives.

This study found that 73% of doctors expressed dissatisfaction with their financial situations. This surpasses the OECD's (2020) average of 40%, highlighting potential challenges and areas for improvement in addressing their financial well-being. Furthermore, a significant majority (68%) believed that banks should assess the ethics of companies before offering them banking services, emphasizing the importance of ethical considerations in financial decisions. However, concerning financial well-being, 40% of surveyed doctors indicated negative sentiments, disagreeing with the statement that their money situation hinders them from achieving the things they desire in life. This reveals potential challenges in achieving financial fulfillment and life choices among this demographic, contrasting with previous studies that suggested that most people tend to be neutral (OECD 2020).

Financial Behavior and Financial Literacy

Among doctors, the study found that the average financial behavior attained was 69%, with an impressive 79.7% of participants surpassing the financial behavior threshold, indicating generally positive financial behaviors. In comparison, the OECD (2020) reported a lower average financial behavior of 59% across 26 countries, with only 49% of adults meeting the minimum target for financial behavior. This suggests that doctors, as a group, exhibit more favorable financial behaviors than the global average. Specifically, the majority of doctors in the study (77.6%) considered affordability before making a purchase, indicating a high level of awareness about their spending. This surpasses the global average reported by the OECD (2020) at 70%. Financial organization behaviors, such as paying bills on time, were reported by 78.7% of doctors, aligning closely with the OECD (2020) average of 79.4%. However, the study also revealed that a significant majority of doctors (63.7%) keep a close watch on their finances, while 13.8% admit to not doing so. This highlights an opportunity for education on financial

vigilance, emphasizing the importance of regular financial monitoring and awareness.

Regarding budgeting, the study found that 86.7% of doctors are responsible for day-to-day financial decisions, and 63.1% have a household budget, showcasing the positive impact of financial literacy on proactive financial management behaviors. Additionally, only 17.7% of the doctor participants disagreed with any form of financial tracking. This performance is better than the findings in South Africa, where 36% of healthcare workers did not have a budget (Millen and Stacey 2022). Moreover, 93% of participants engage in various savings practices, outperforming global averages (between 24% and 97%), suggesting a robust saving culture among Kenyan healthcare workers (Millen and Stacey 2022, Atkinson and Messy 2012). Sixty-eight percent of doctors believe in making informed financial decisions. However, 46% of doctors borrowed money to make ends meet, with financial literacy associated with more cautious borrowing habits. The findings indicate that while financial vigilance, goal-setting, and budgeting are areas of strength, there is room for improvement in some financial behaviors and attitudes among healthcare professionals in Kenya.

In this study, the majority of doctors (38%) make a plan to manage their income and expenses. However, only 17.5% are confident in keeping notes of their spending, and less than 50% take note of upcoming bills or use banking apps for tracking outgoings. These findings highlight areas for improvement in financial tracking practices among healthcare professionals in Kenya, indicating a potential need for increased awareness and education on effective personal finance management (Atkinson and Messy 2012, Lusardi 2019, Lusardi and Mitchell 2011).

Conclusion

This study sheds light on the influence of sociodemographic factors on the financial literacy of healthcare professionals in Kenya. Notably, individuals aged below 60 years and those from urban geographical zones exhibit slightly better financial knowledge, attitudes, behaviors, and overall financial literacy. These findings underscore the importance of tailoring financial literacy interventions based on age-specific and region-specific considerations. However, factors such as gender, marital status, education level, employment status, medical cadre, years of experience, and income level have minimal impact on financial literacy. Notably, Kenyan women doctors in this study had higher financial attitudes, financial knowledge, and financial behavior scores destabilizing the notion previously stated that being male is an independent factor for high financial literacy. Similarly, the study showed a strong financial knowledge, positive attitudes, and prudent financial behaviors among the Kenyan participating doctors compared to the OECD global averages. Nonetheless, by recognizing and accommodating the diverse needs and contexts of healthcare professionals, policymakers and educators can design targeted programs that resonate with the specific challenges and requirements faced by individuals in different sociodemographic groups. The

study highlights a robust financial foundation being pivotal for informed decision-making across various financial domains, from basic monetary choices to intricate investment decisions. The linkage between financial knowledge and financial literacy emphasizes the need for multilevel solutions geared toward advancing financial education among healthcare professionals. Tailored interventions should be designed to bolster financial knowledge, equipping individuals with the skills necessary for adept financial management, risk mitigation, and the optimization of financial opportunities. This targeted approach aligns with the overarching goal of fostering comprehensive financial literacy within the healthcare workforce in Kenya.

Overall, this study's participants outperformed global averages from previous studies on financial attitude, financial knowledge, and financial behavior. The findings suggest a strong correlation between positive financial attitudes and higher levels of financial literacy among Kenyan healthcare professionals, highlighting the interconnected nature of these two aspects. Individuals with a high financial attitude tend to exhibit greater awareness of their financial goals and a drive for improvement. To enhance positive financial attitudes, integrating financial education into early education, and medical training curricula, and leveraging digital technologies can be effective. Sensitization programs and targeted campaigns can further promote a positive financial attitude among healthcare professionals, contributing to a more financially resilient and informed workforce.

This study establishes the importance of promoting good financial behavior among healthcare professionals. The findings emphasize the significance of fostering comprehensive financial education to instill prudent and informed financial practices, covering aspects such as purchase considerations, bill payment, financial organization, decision-making, and proactive planning. To promote responsible financial habits, integrating financial curriculums into the professional training curriculum for healthcare workers and offering tailored programs that address their specific needs is beneficial. Policymakers have an opportunity to design targeted initiatives, leveraging digital tools for broader reach and effectiveness.

Our study was constrained to a cross-sectional design. To further understand the enduring effects of financial education initiatives on healthcare workers' financial knowledge and outcomes, future studies should delve into longitudinal research. Additionally, exploring the influence of cultural factors and personality traits on financial literacy is advised, building on the insights gained from our financial attitude findings. Finally, researchers should investigate how financial inclusion, encompassing access to financial services and instruments, impacts the financial behavior of healthcare professionals, taking into account the role of geographical location.

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